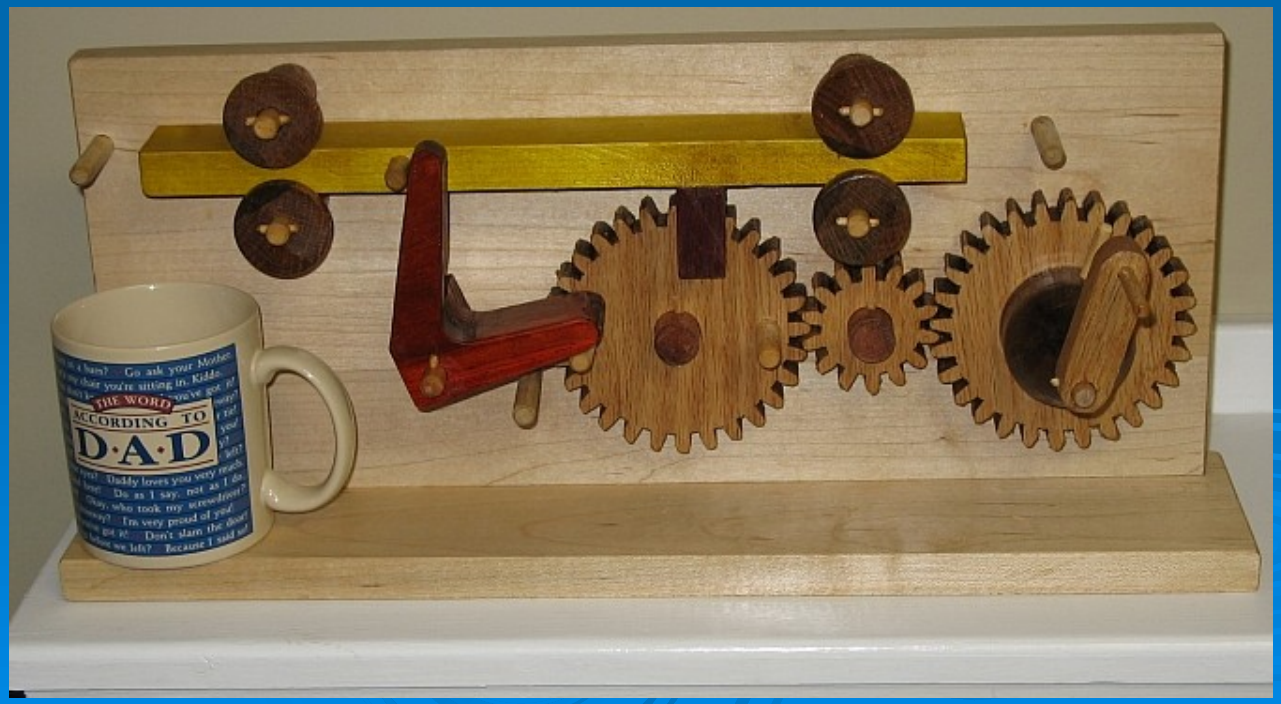
Making Wooden Models

By:

Dale C. Maley



Making Wooden Models

Personal Background:

-Raised on farm in Fairbury
-Graduated Fairbury-Cropsey HS
-University of Illinois
-B.S. in Agricultural Engineering
    -Power & Machinery
-MBA from Illinois State University

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Personal Background:

-2 Years Ford Tractor Company
-Excellent Engineer Training Program
-37 Years Caterpillar Inc.
-Developed sophisticated testing machines
-16 U.S. Patents in Diesel Fuel Injection

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Personal Background:

-1968 World Book Encyclopedia
-Had detailed instructions for building science projects
-Built many of them including electric motor model as a kid

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Personal Background:

-Woodworking
-Learned from Lloyd Wells – Father-in-Law
-Built all types of projects
-Started building hand-cranked mechanical models in 2009
    -No batteries required ☺
    -Kids & adults enjoy them
    -Relatively inexpensive hobby
    -Fun to design and build

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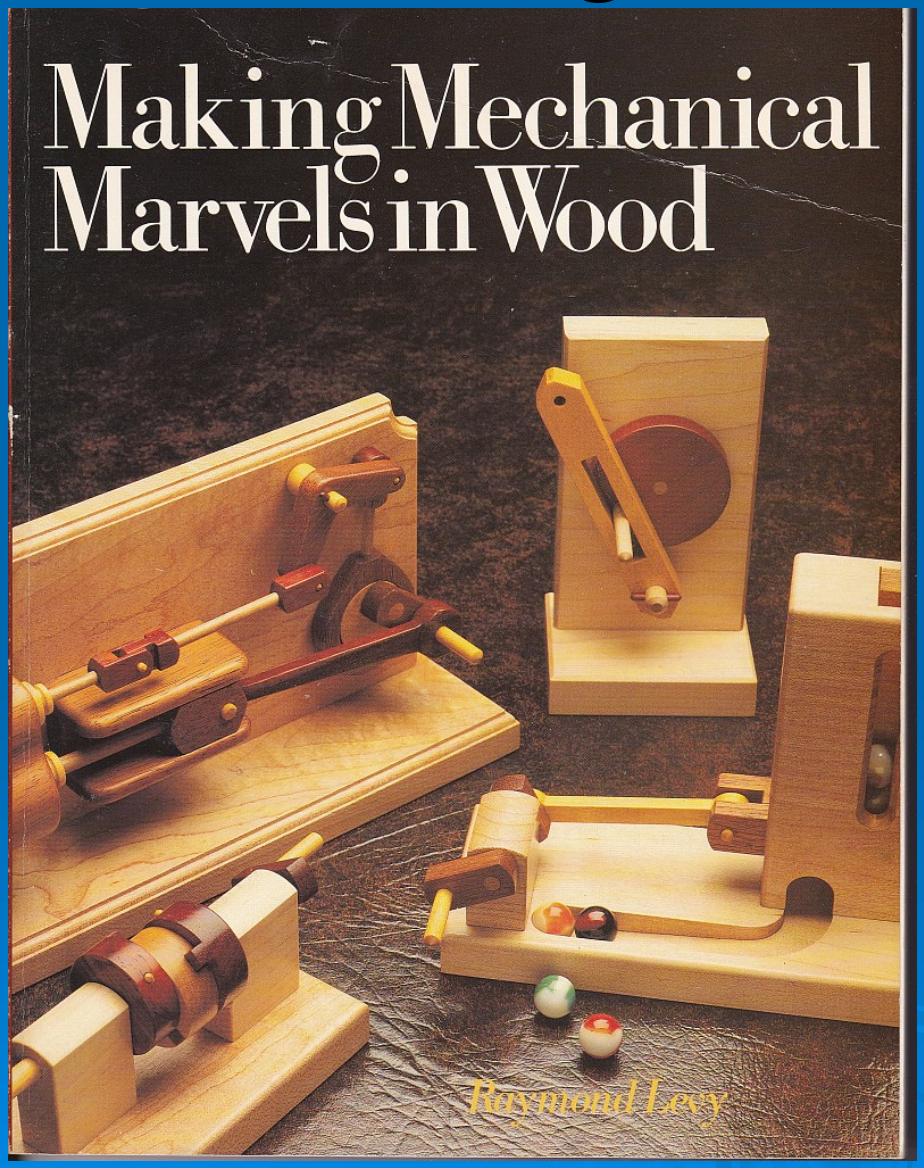

- 15 Different hand-cranked models
- Mr. Levy built them to use as classroom teaching models
- I built most of them

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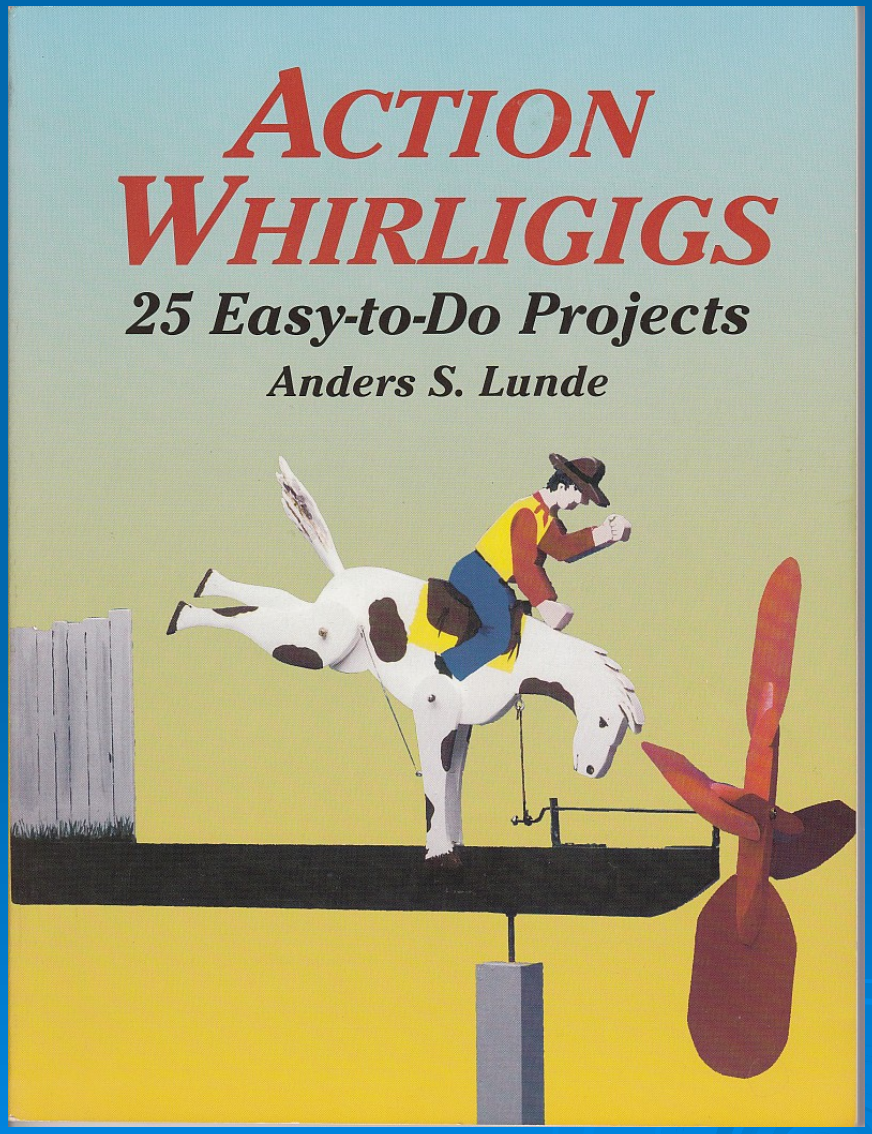

- Wind powered vs. Hand-cranked
- Had to "beef up" designs
- Wind too hard at my house

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Problem: Too windy for whirligigs

Problem: Why not convert from wind-powered to Hand-Cranked model?

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Very Popular Model ☺

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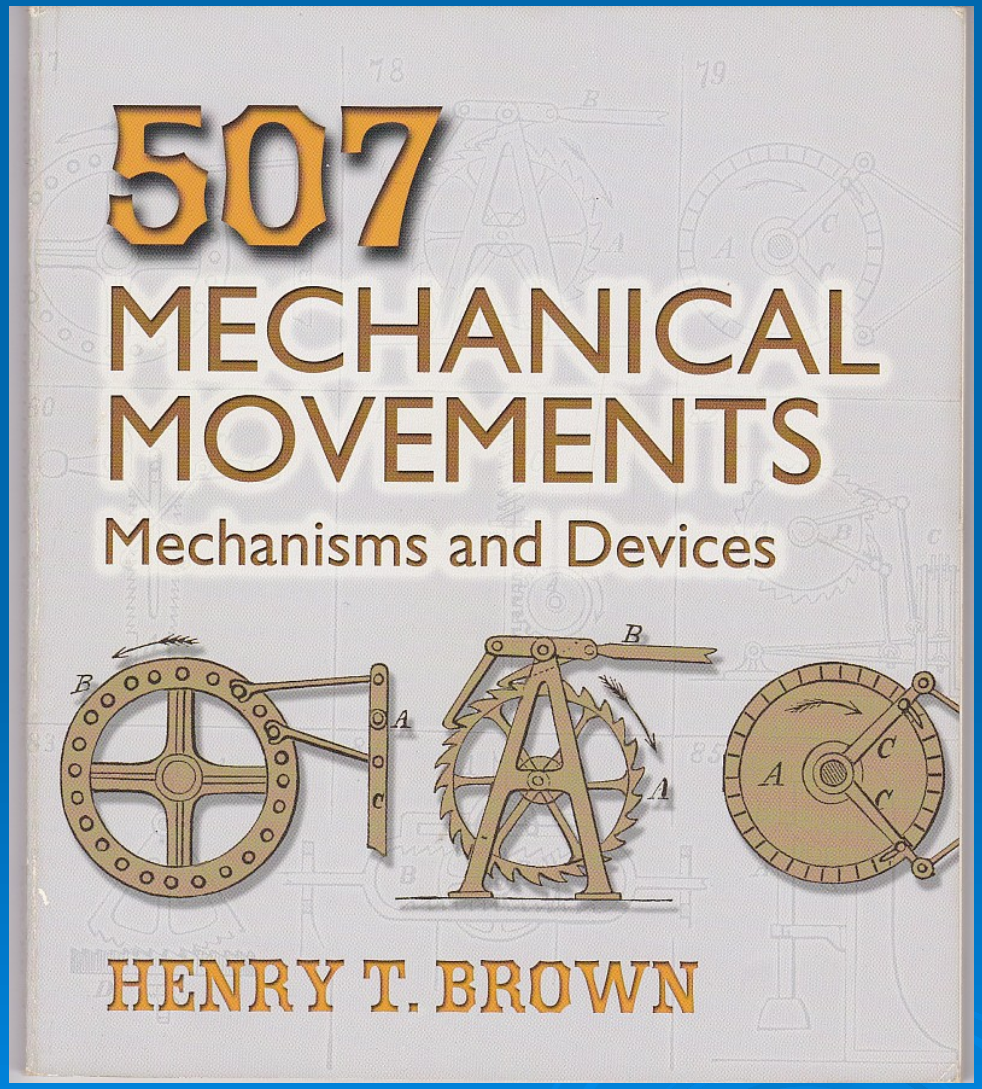

Published in 1868

- Ran out of ideas for more Hand-Cranked models

Why not modify these 1868 ideas to hand-cranked models?

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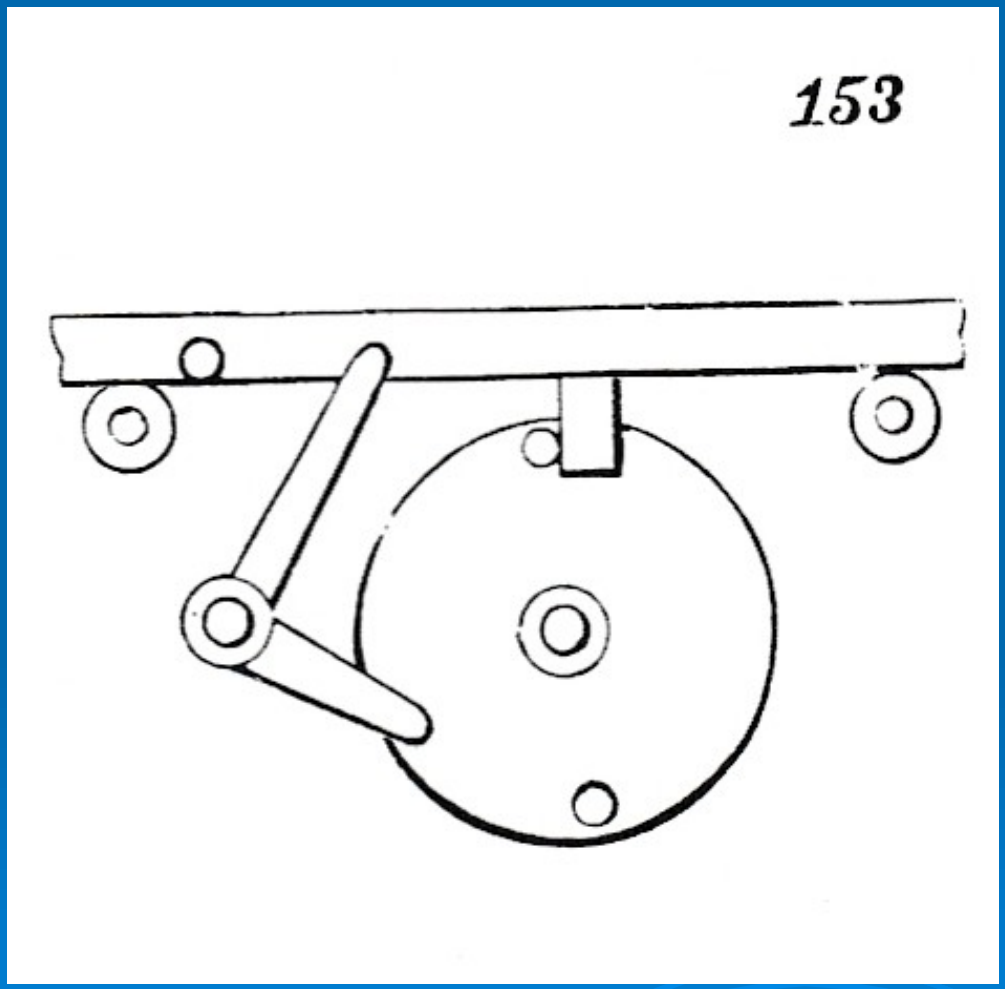

153. Circular motion into alternating rectilinear motion. The studs on the rotating disk strike the projection on the under side of the horizontal bar, moving it one direction. The return motion is given by means of the bell-crank or elbow-lever, one arm of which is operated upon by the next stud, and the other strikes the stud on the front of the horizontal bar.

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How do you convert this 1868 concept to a Hand-Cranked model ??

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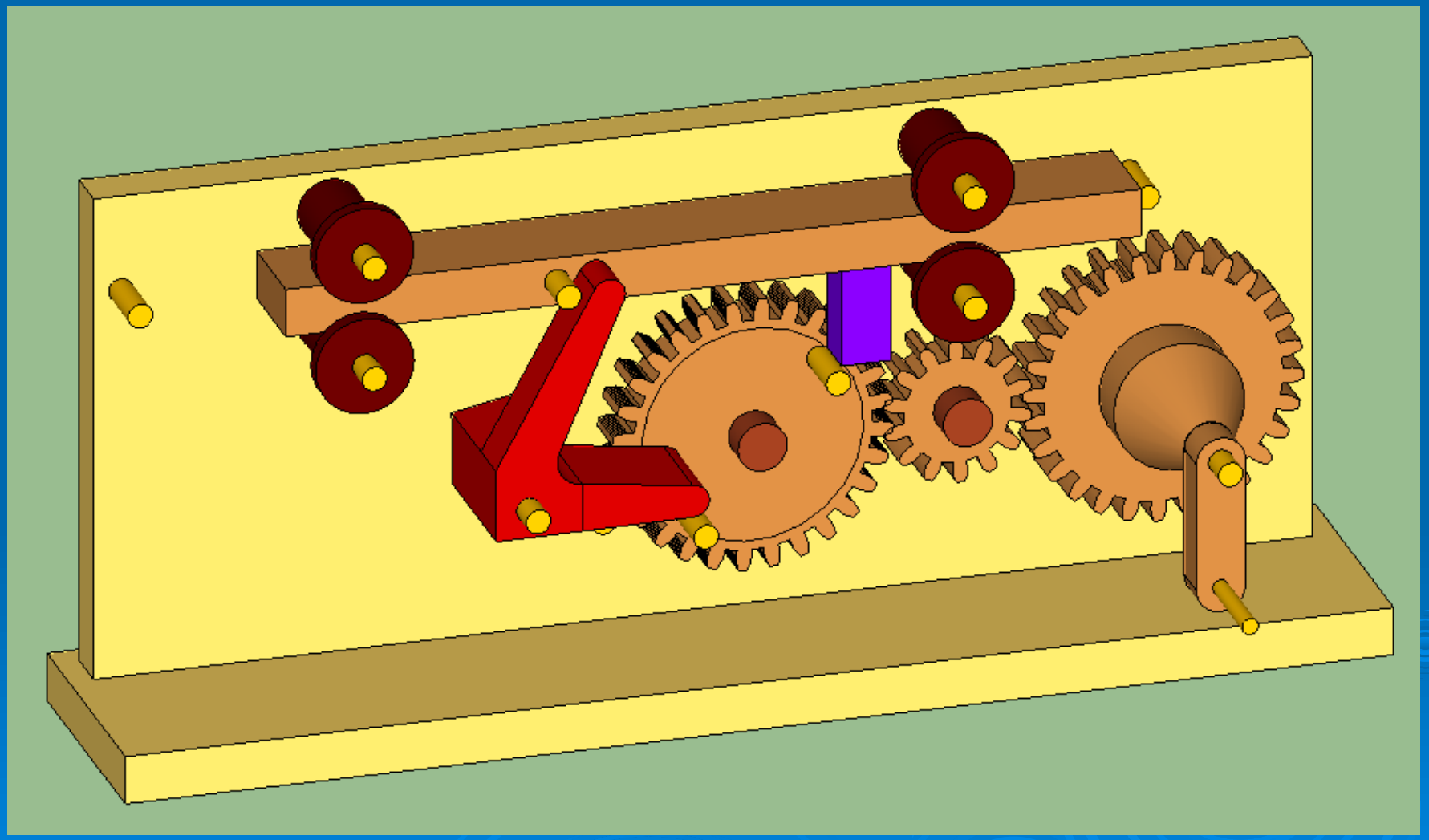

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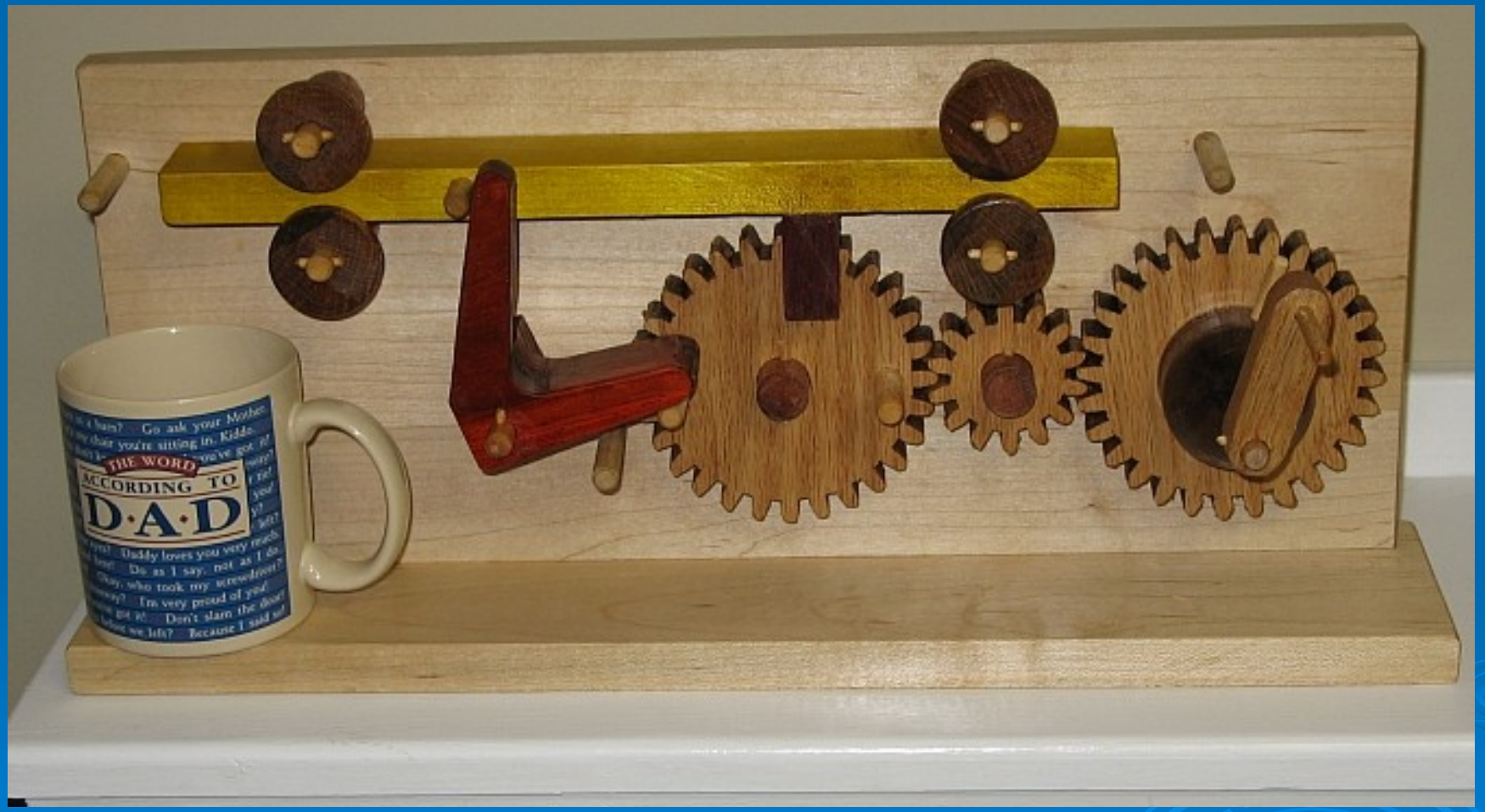

Kids Love this One……..Lots of motion & Lots of Noise ☺

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1893 Chicago World's Fair
Had to outdo the French Eiffel Tower.

264 feet high!
Every fair now has a Ferris Wheel

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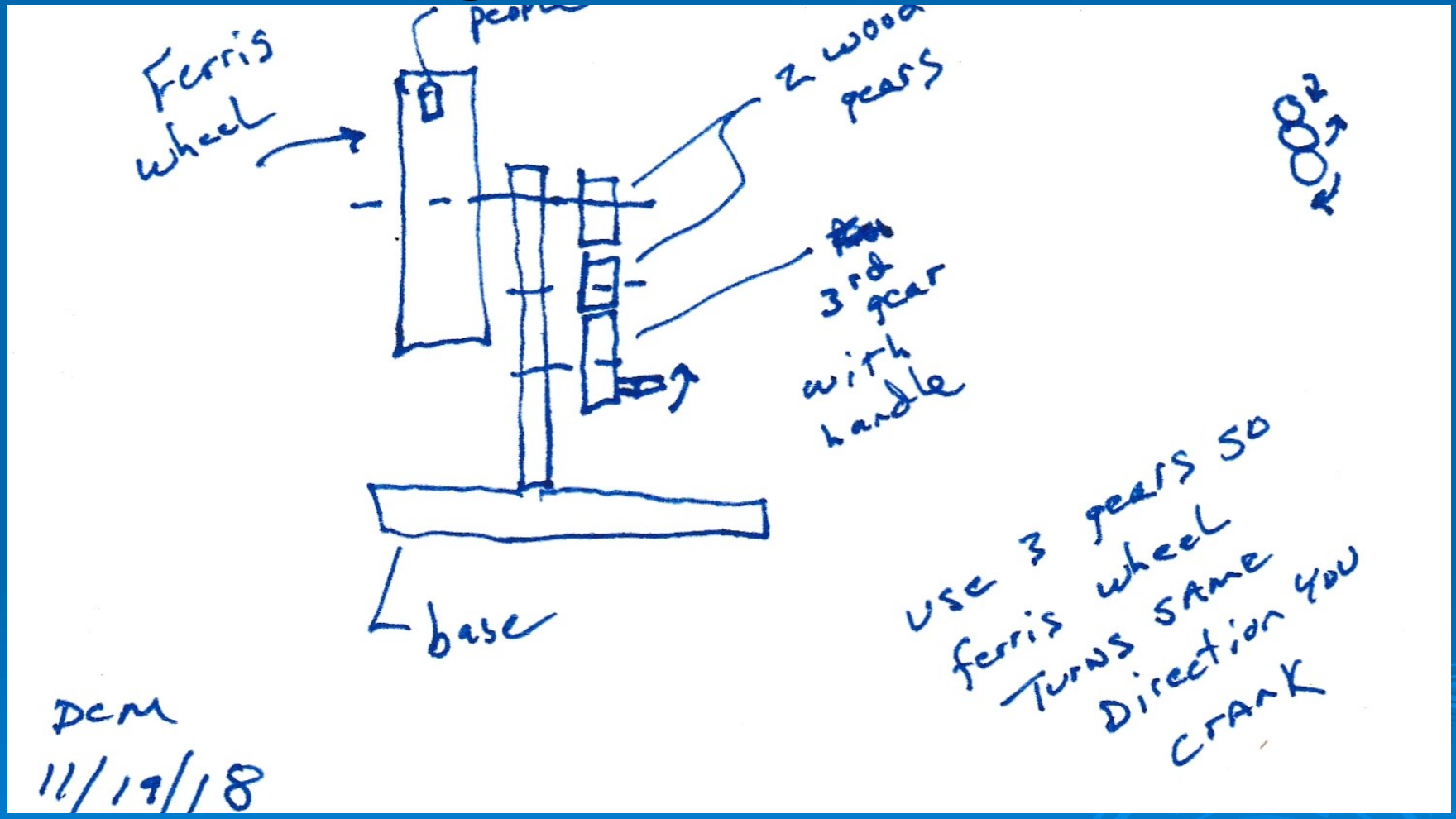

1st Concept Sketch

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Pinterest

Liked the people carriers

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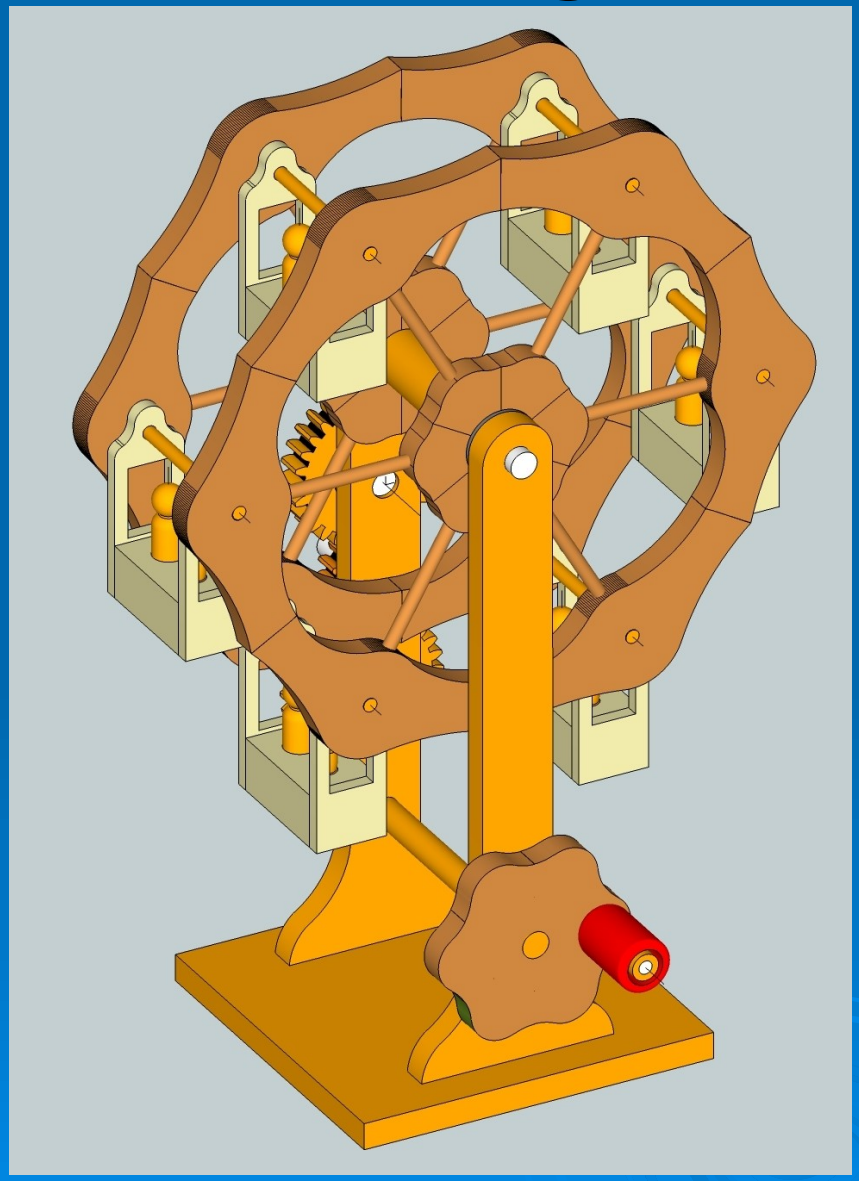

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- Kids like to crank it too fast and little people fly out

(I forgot to design seat-belts) ☺

- No harm, just put the little people back in their baskets ☺

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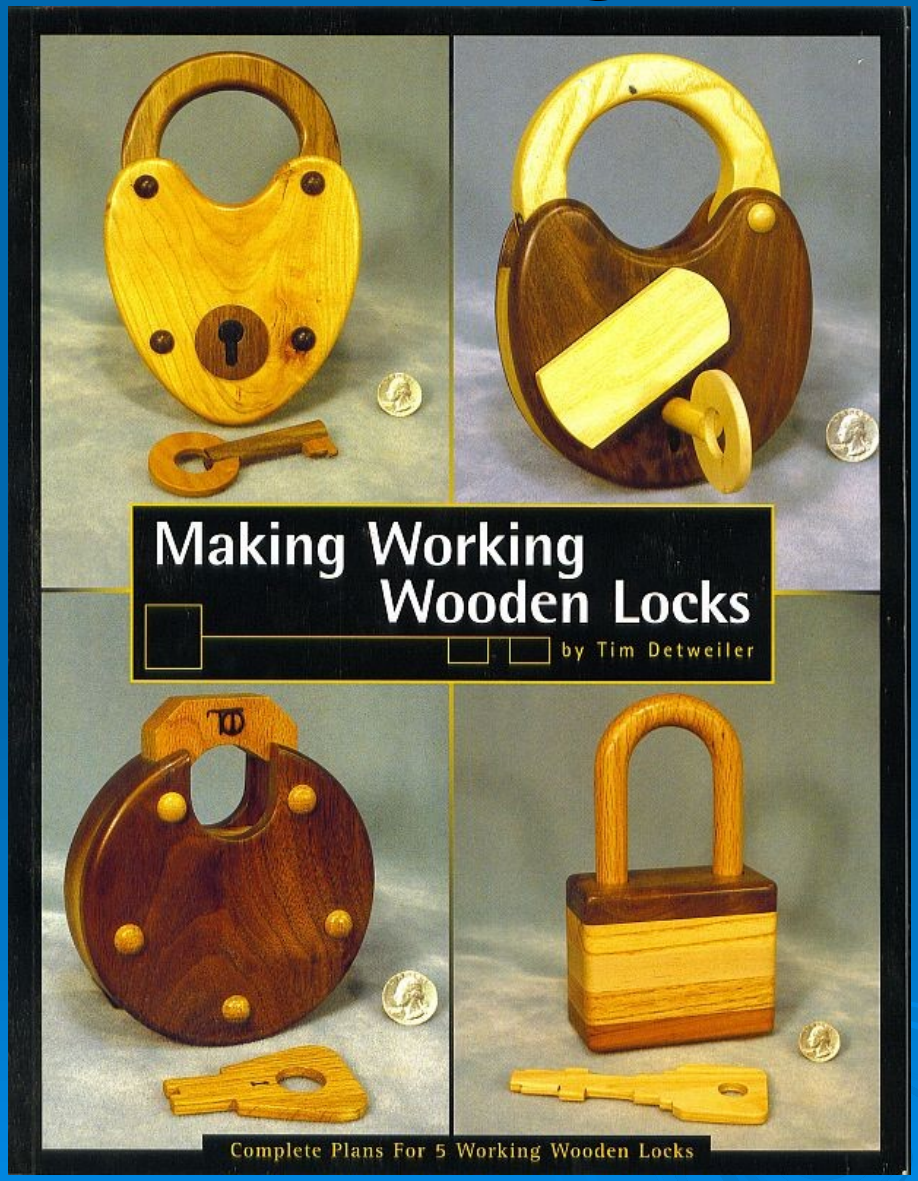

- Turning key similar to Hand-Cranked
- All locks use metal springs
- If you want the lock to be “all wood”, what do you use as the spring?

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Ash spring

“Autistic boy story”

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- 1922 Grade School shop class projects

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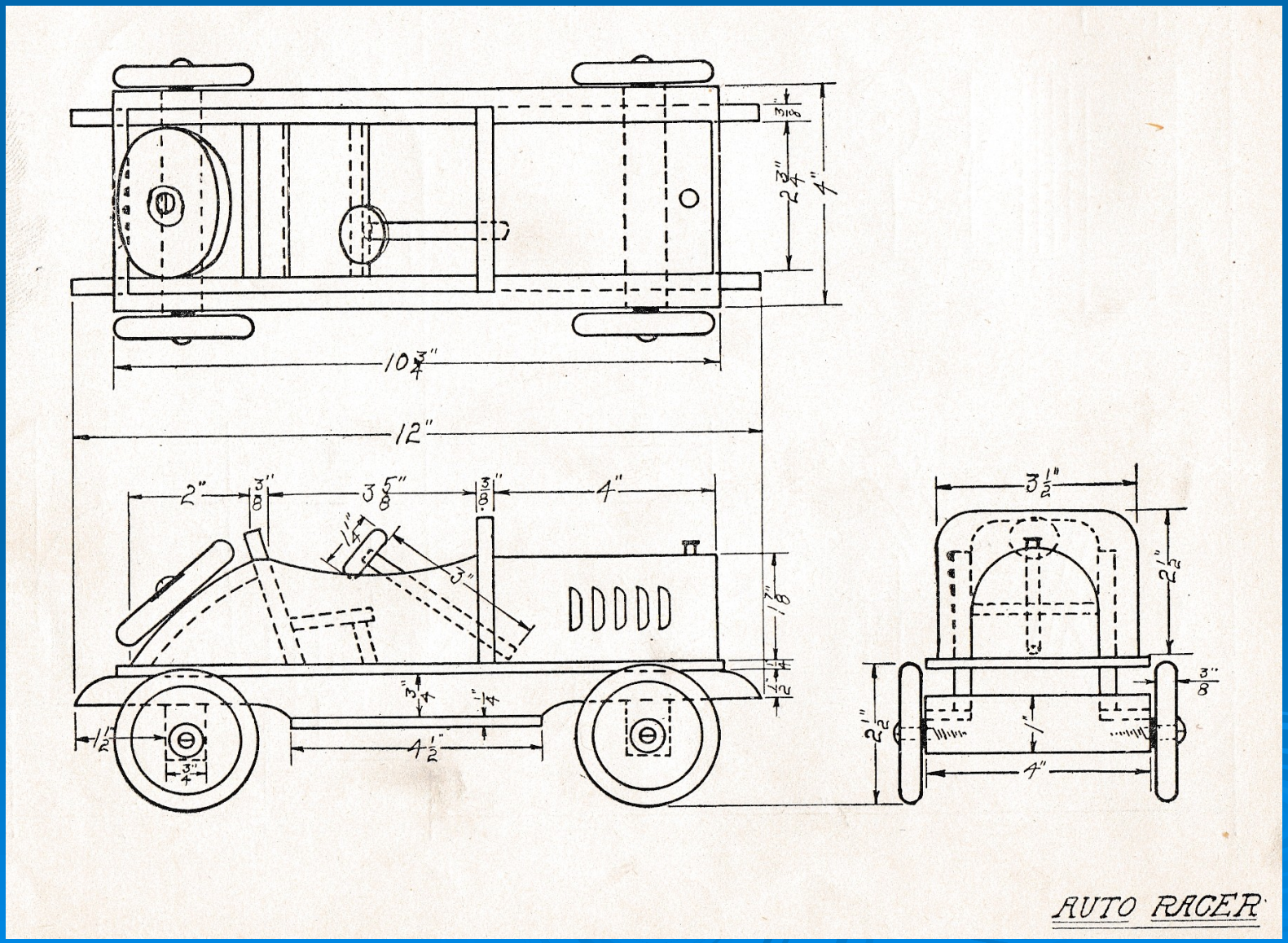

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1904 Thomas Flyer

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Pink one ??

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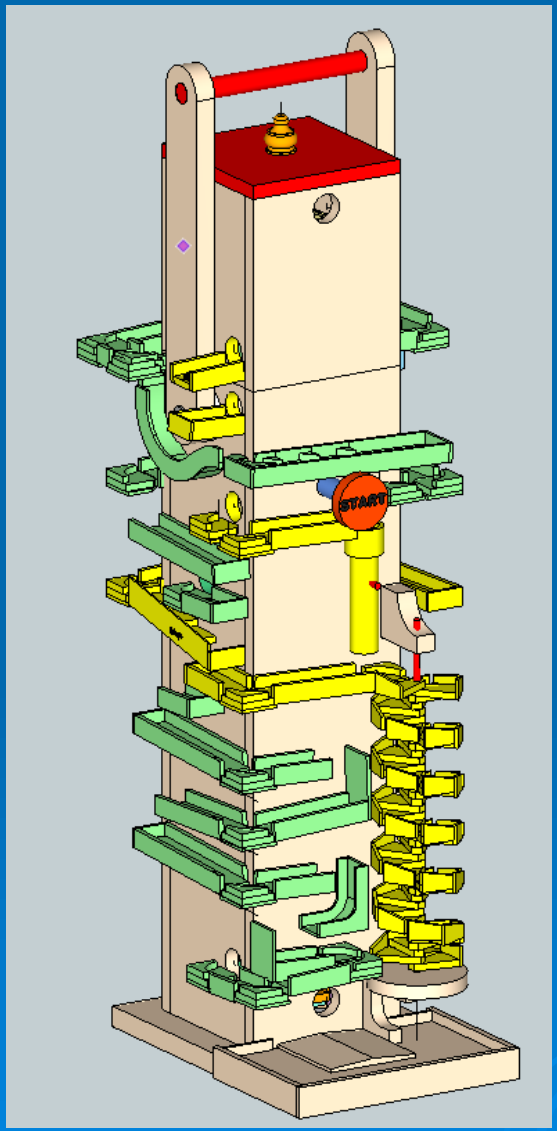

- 26-Marble Machine
- Designed by retired Engineer (now deceased)
- He made 2 of them
- Gave photos & drawings to woodworking magazine
- 32 page plan booklet for $10.00

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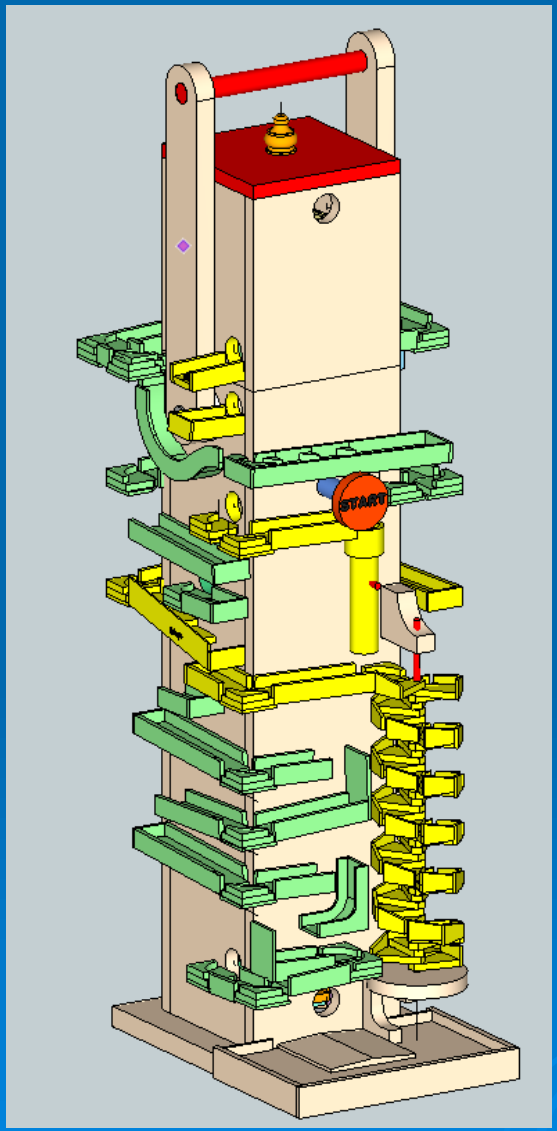
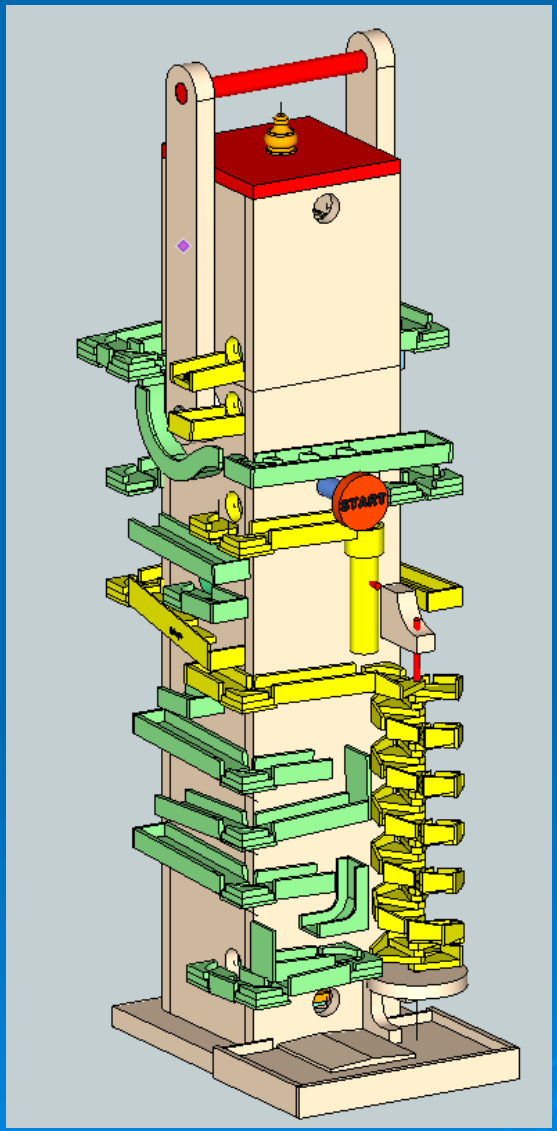


- 32 pages of plans turned out to be “worthless”
- Why?
- Creator only used 2D and not 3D.
- A few 3D illustrations would have been priceless

Making Wooden Models



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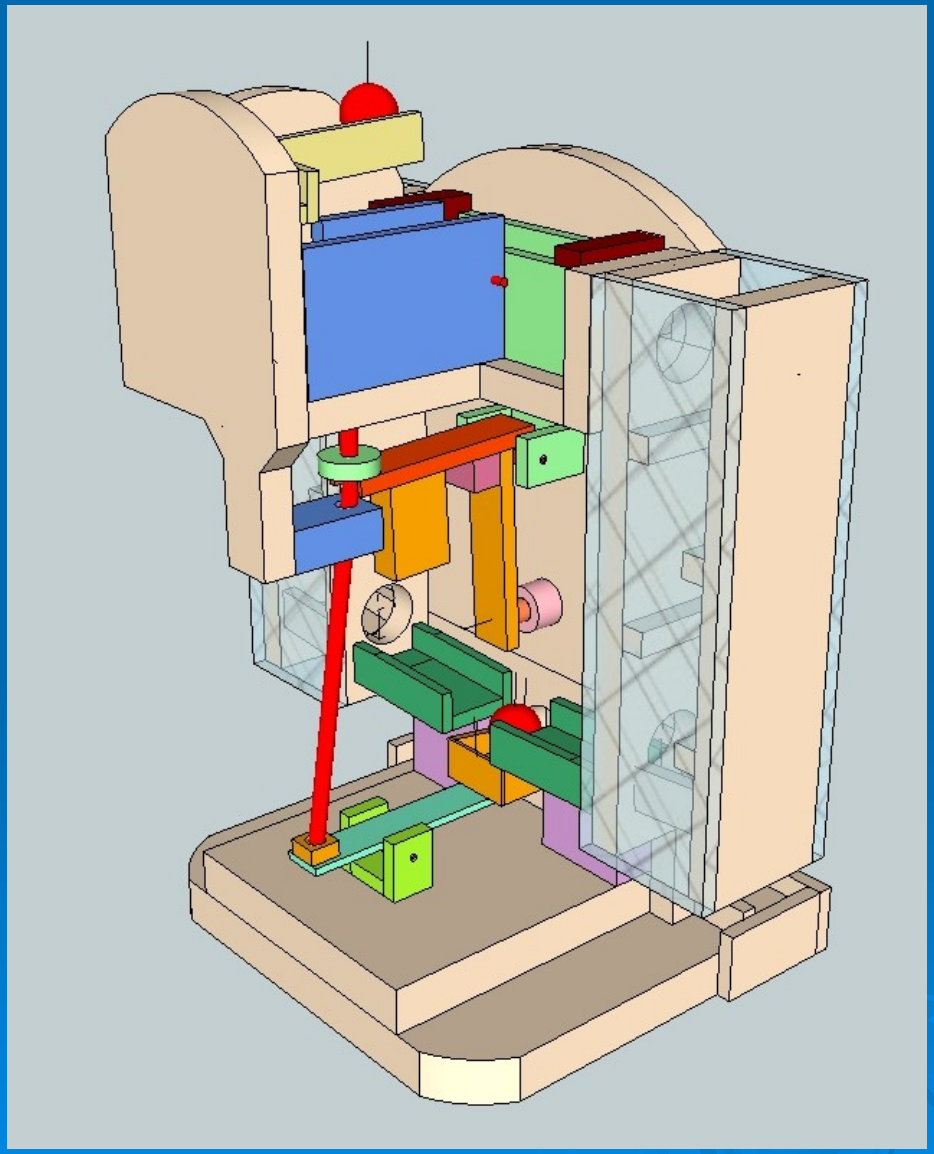

- Designed & built “Illustrator”
- Demonstrates the key mechanisms in the machine

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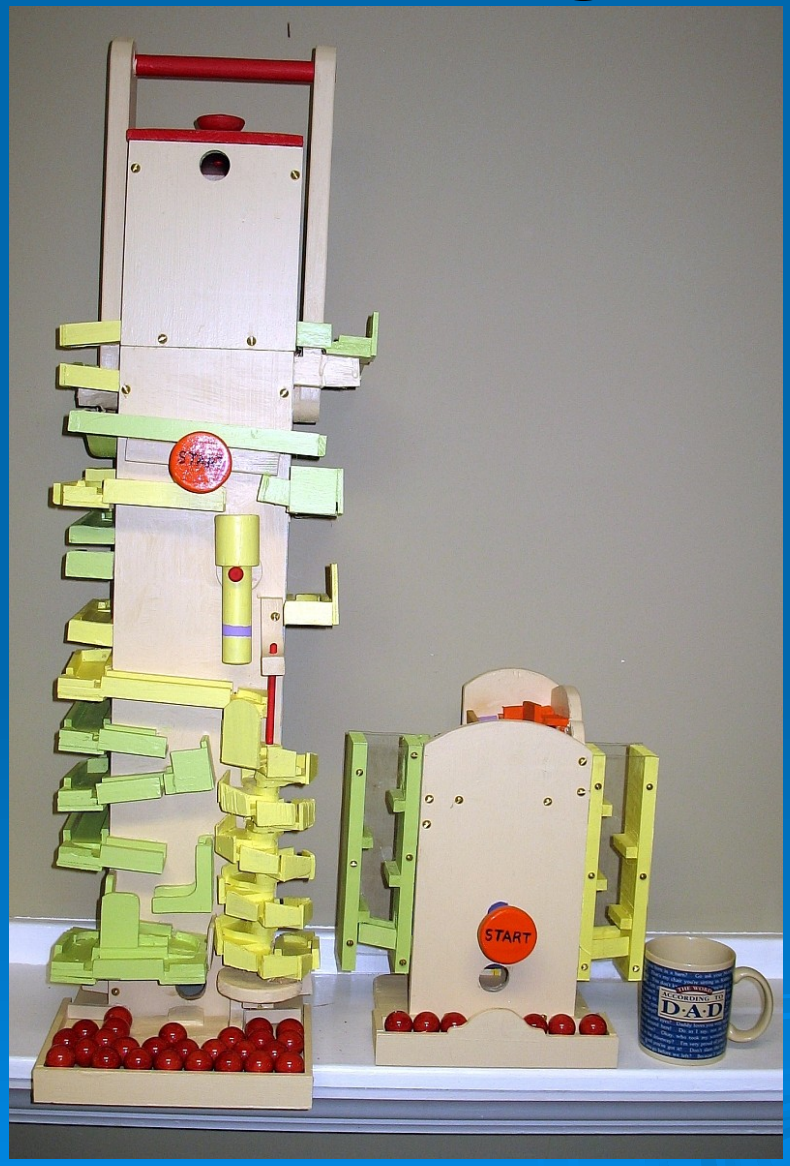

- Big Marble Machine & “Illustrator”
- 2 Tracks (Green & Yellow)
- Push Start button and runs by itself for 16 minutes ☺

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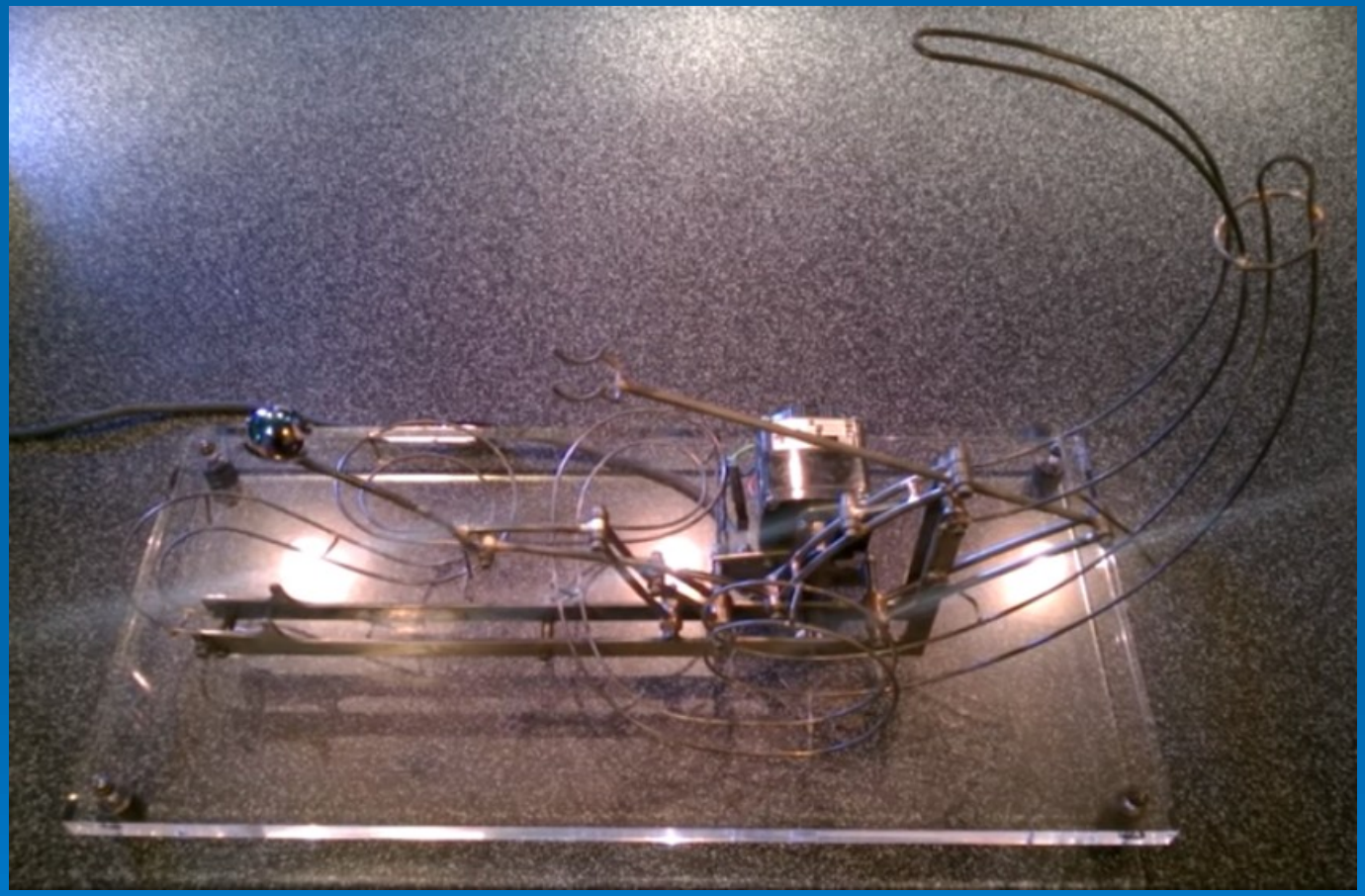

- YouTube video of Marble Lifter
- Run by 5 RPM motor

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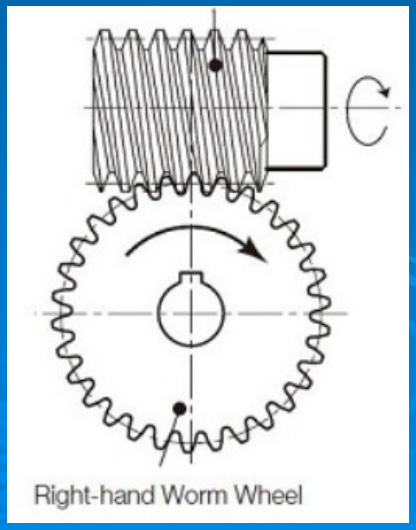
- How to convert to hand-cranked model?
- Kids can hand-crank up to 100 RPM Max
- So need speed reduction of 100/5 = 20:1

Use wood worm gear



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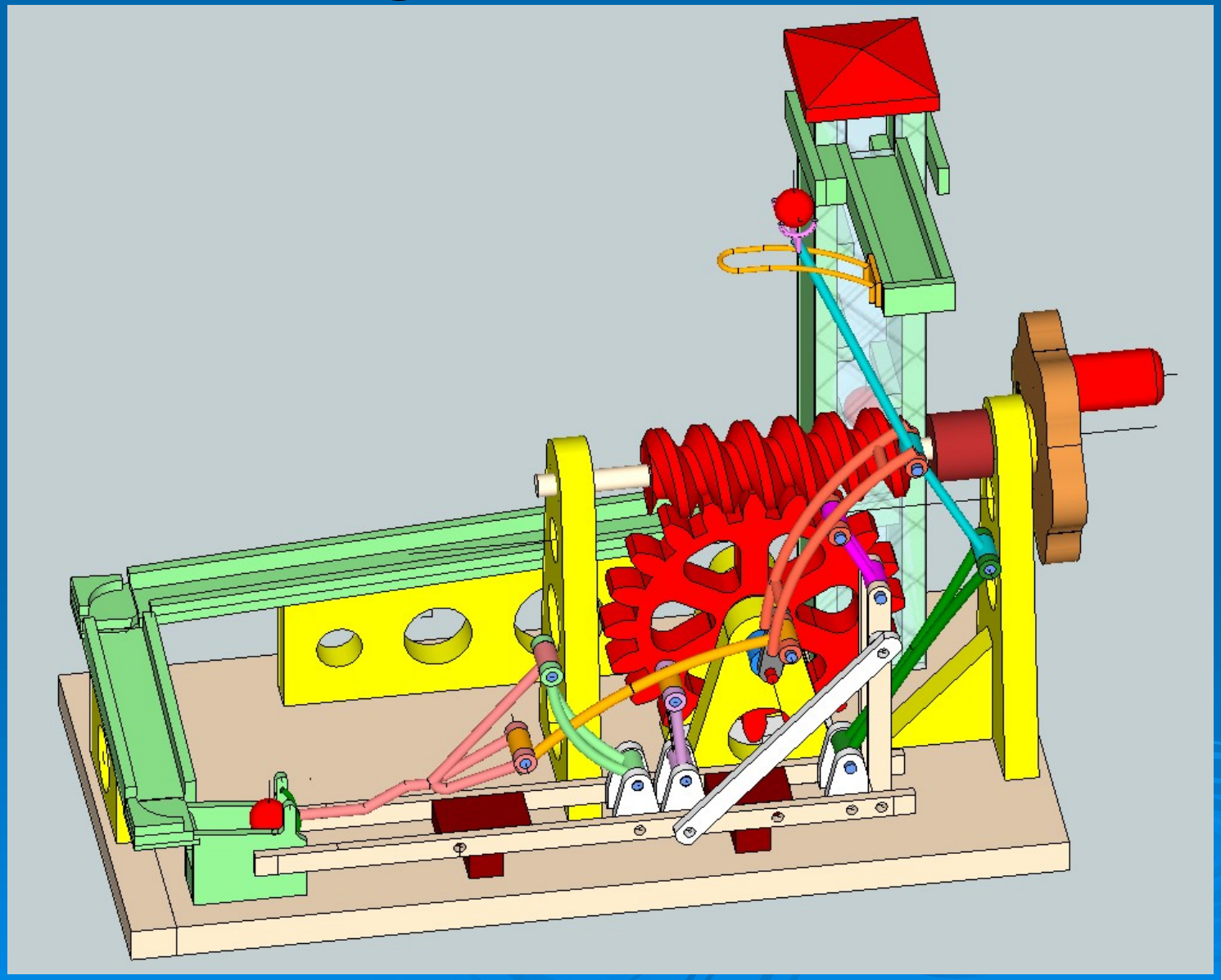

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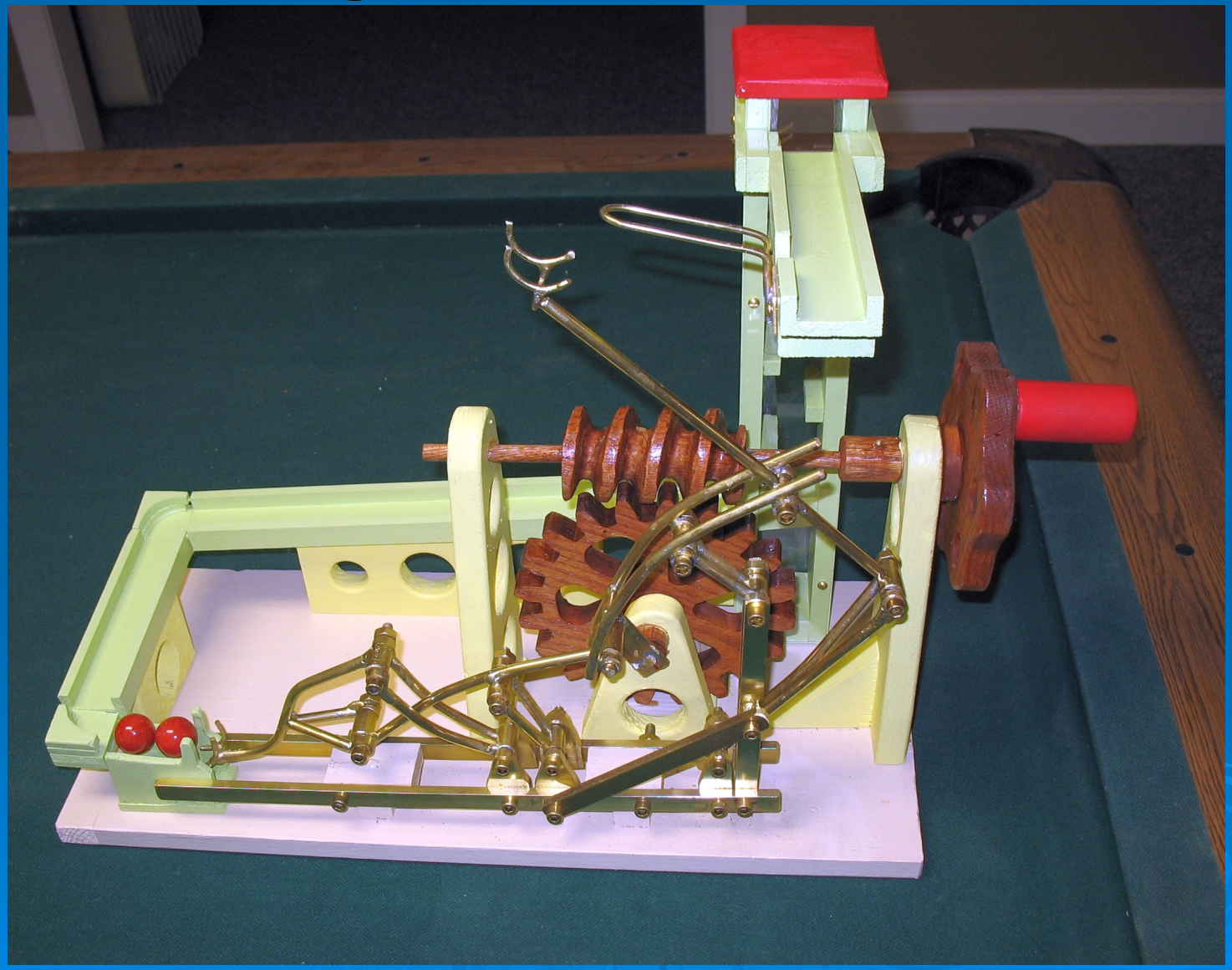

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YouTube Search

Dale Maley

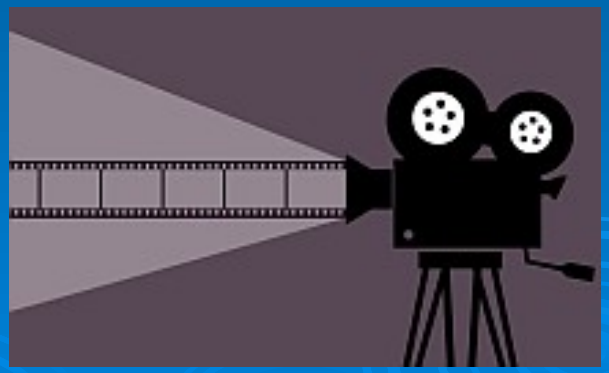
508 subscribers

How to Make a Wood Worm Gear

2016
Scrap block to hold work-pieces below top of water level.
Fill pipe with H2O & 2 caps of Downy. Soak 7 days minimum.
Standard 3" Sch 40 PVC. Long enough to hold your work-pieces
Standard Sch 40 PVC 3" cap glued on
7:15

The Secrets of Steam Bending Kiln Dried Wood

20K views • 4 years ago



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- Post projects on LumberJocks.com

- Members think my brass worm-gear marble lifter my best hand-cranked model ☺

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The End

- Hope you enjoyed the talk
- Enjoy playing with models ☺